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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,707	07/25/2003	Tatsuya Kishi	239166US-39-39-2RD DIV	2680
22850	7590	03/01/2006	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			KIM, PAUL D	
			ART UNIT	PAPER NUMBER
			3729	

DATE MAILED: 03/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/626,707

Applicant(s)

KISHI ET AL.

Examiner

Paul D. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 18-21 and 26-30 is/are rejected.
- 7) ☐ Claim(s) 22-25 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 10/097,571.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/25/03, 12/30/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. Correction is required. See MPEP § 608.01(b).
2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: --A METHOD OF MANUFACTURING A MAGNETORESISTANCE EFFECT DEVICE--.

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

As per claim 20 the phrase "forming a pair of extension regions... to each other" as recited in lines 2 and 3 does not disclose in the specification.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "forming a pair of extension regions... to each other" as recited in lines 2 and 3 renders the claim vague and indefinite. It is unclear as to where the pair of extension regions is formed.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 18, 19, 21, 29 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Hsiao (US PAT. 6,209,193).

Hsiao teaches a process of making a spin valve sensor comprising steps of: forming a first ferromagnetic body, a nonmagnetic dielectric layer on the first ferromagnetic body, and a second ferromagnetic body on the nonmagnetic dielectric layer (col. 8, lines 42-48); etching part of an external region of a predetermined ferromagnetic tunnel junction region using a first linear mask pattern (302 as shown in Fig. 28) which is traversing the predetermined ferromagnetic tunnel junction region as shown in Figs. 27-31; and etching another part of the external region of the predetermined ferromagnetic tunnel junction region using a second linear mask pattern (304) which is traversing the predetermined ferromagnetic tunnel junction region and

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intersecting with the first linear mask pattern as shown in Figs. 32-36 (see also col. 8, line 23 to col. 9, line 47).

As per claims 19 and 21 the first and second linear mask patterns are substantially orthogonal to each other and having an overlapping rectangular region as shown in Figs. 28 and 32.

As per claims 29 and 30 of the first and second ferromagnetic bodies comprises a magnetization free layer in which a magnetization is free to rotate in an applied magnetic field and other of the first and the second ferromagnetic bodies comprises a magnetization pinned layer in which a magnetization is fixed in the applied magnetic field (col. 8, lines 42-48).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsiao in view of Iwasaki et al. (US PAT. 5,549,978).

Hsiao teaches all of the limitations as set forth above except an easy magnetization axis to one of the ferromagnetic bodies. Iwasaki et al. teach a process of making a magnetoresistive element including a process of providing an easy

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magnetization axis to the ferromagnetic film (121) in order to reduce the saturation magnetic field (H_s) (col. 62, line 29-48). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify a process of fabricating a spin valve sensor of Hsiao by providing an easy magnetization axis to the ferromagnetic film as taught by Iwasaki et al. in order to reduce the saturation magnetic field.

10. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsiao in view of Gill (US PAT. 6,788,502).

Hsiao teaches all of the limitations as set forth above except laminated ferromagnetic body. Gill teaches a process of making a magnetic tunnel junction sensor including a multilayered pinned layer (220) in order to increase stability of the AP-pinned sensor at high temperature as shown in Fig. 2 (see also col. 2, lines 15-42). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify a process of fabricating a spin valve sensor of Hsiao by providing a multilayered pinned layer as taught by Gill in order to increase stability of the AP-pinned sensor at high temperature.

Also, according to Fig. 2 of Gill, the first (222), second (226) and third (210) ferromagnetic films are separated by nonmagnetic spacer films (215, 224).

Allowable Subject Matter

11. Claim 20 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. Claims 22-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul D. Kim whose telephone number is 571-272-4565. The examiner can normally be reached on Monday-Friday between 6:00 AM to 2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul D Kim
Examiner
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